



Manual

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What is SNO?

SNO is a Super Nintendo Emulator

SNO is a program that plays games for the Super Nintendo, a videogame console released by Nintendo between 1990 and 1992. With SNO, you can open a file called a "ROM" that contain the data for Super Nintendo game, and play the game on your computer.

SNO is a Java Applet

SNO was created using the Java programming language. It is a Java applet, meaning that it can be embedded into a web page that visitors can run. SNO can even download game and save data from the web server that it is hosted on; this means that you can embed any SNES game that you have into your own website!

How to Play

SNO supports playing several popular Super Nintendo games. This section covers how to play a Super Nintendo game on a website that uses SNO.

Note that this guide does NOT cover game-specific topics. Only generic Super Nintendo functions are covered.

Starting Up

When you first arrive on a page using SNO, you may receive a warning dialog. This dialog is prompting you to allow SNO to run on your computer. To continue, click the “Run” or “Yes” buttons to allow SNO to run.

If the website has linked SNO to a ROM file, SNO will automatically load and play the game; you can start playing right away!

Loading your own Game

Alternatively, you can load a ROM file stored on your own computer using the File -> Open menu in the menu bar. When selected, a file dialog will appear. Use the dialog to select the ROM file that you wish to play. Confirm your choice and SNO will load the ROM file and begin playing the game you selected.

Super Nintendo ROMs typically end with the “.smc” extension. SNO can also open zipped ROM files.

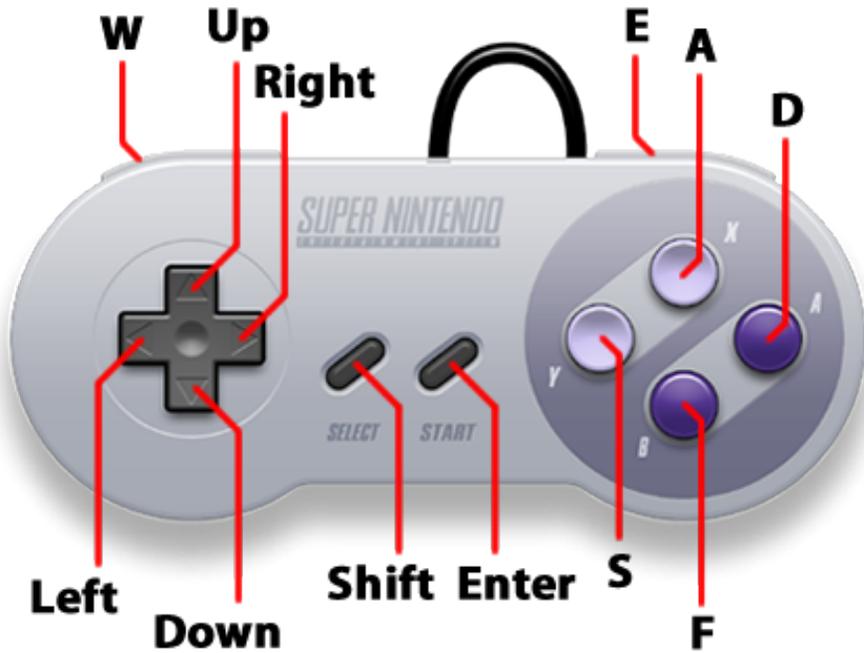
Playing

SNO maps keys on your keyboard to the buttons on an SNES controller. After the game has started, click on the game screen to ensure that it will respond to your keyboard.

Controls

This following table, as well as Figure 1, show the default controls for SNO. Note that site owners may change the controls for SNO; the ones shown here are the defaults.

Figure 1: SNO Controller Mapping



SNES Controller	Keyboard
D-Pad	Arrow Keys
A Button	D Key
B Button	F Key
X Button	A Key
Y Button	S Key
R Bumper	W Key
L Bumper	E Key
Start	Enter / Return
Select	Shift

Gameplay

Each SNES game differs in terms of gameplay. Many games include instructions that explain how to play. If you are having trouble playing a game, game help sites, like GameFAQs, may have more information.

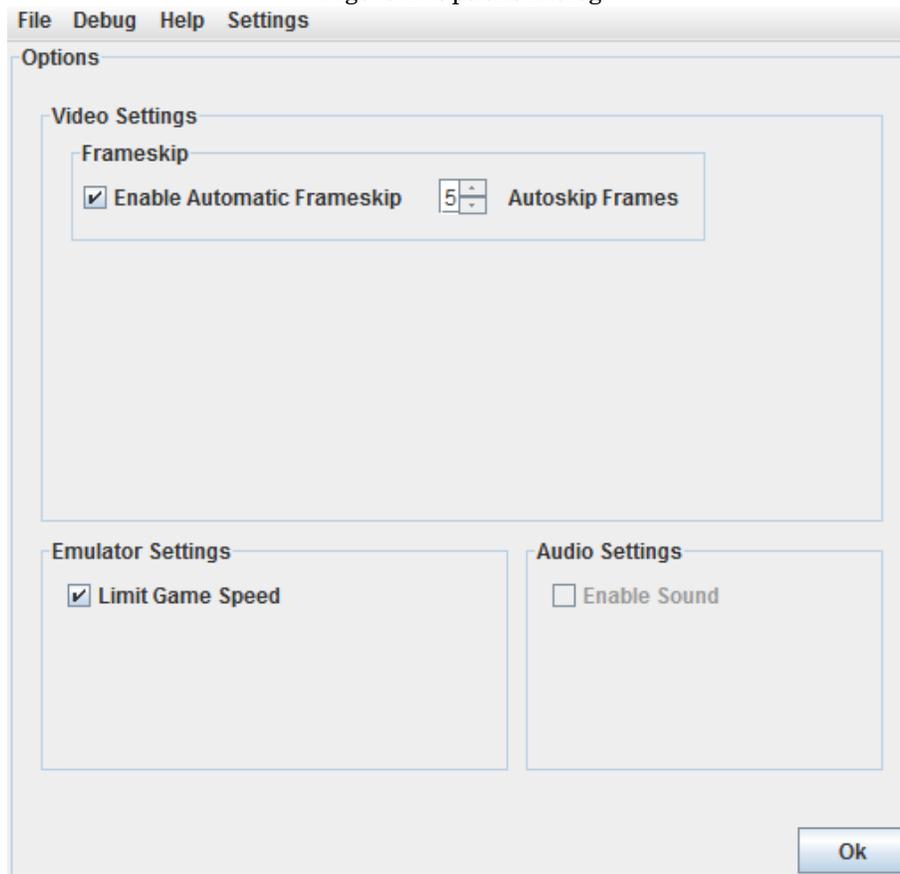
Configuration

SNO offers several options for configuring your gameplay experience.

Options

The options screen allows you to control certain aspects of the emulator. It is accessed by the **Settings->Options** menu entry.

Figure 2: Options Dialog



Enable Automatic Frameskip

Automatic Frameskip skips rendering of a certain amount of frames when the emulator is running slow. This can help improve game performance, but animations will be jumpy and less smooth as a result.

Autoskip Frames

Sets the amount of frames to skip when frameskip is enabled.

Limit Game Speed

When checked, this attempts to match the original SNES speed. If unchecked, games will run as fast as they can, and may run faster than the original SNES.

Enable Sound

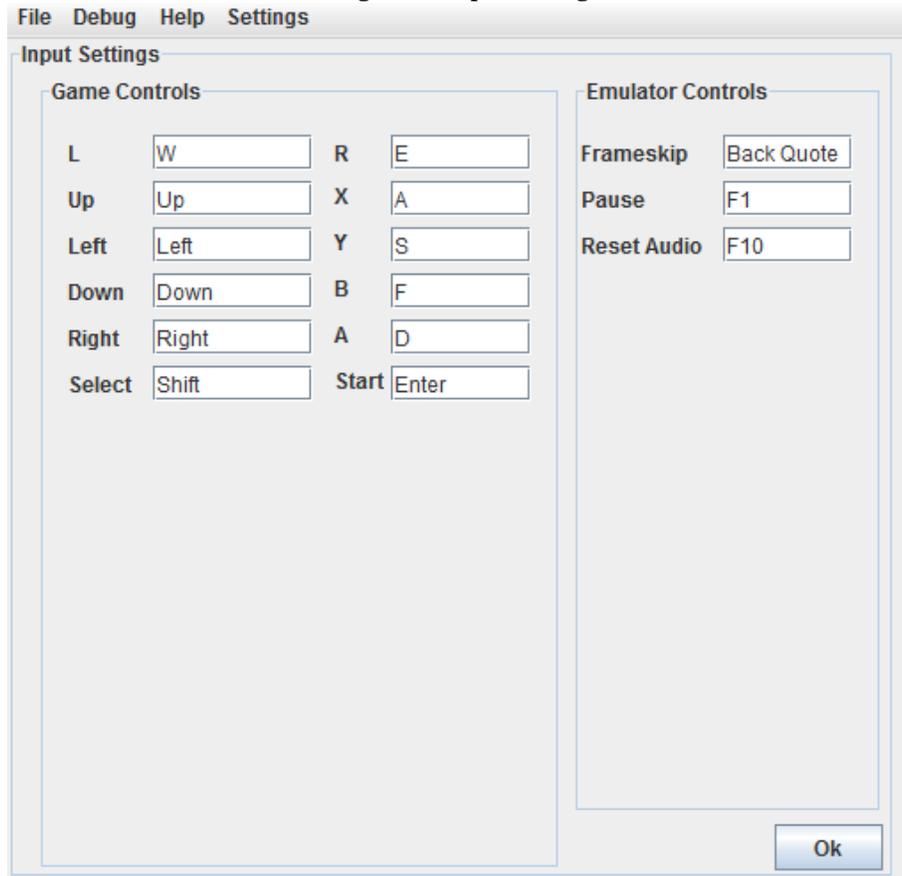
Controls audio output. Audio is unimplemented in SNO, thus this option is disabled.

Input

The input screen allows you to change the keyboard keys that map to the SNES controller, as well as other emulator controls. It is accessed by the **Settings->Input** menu entry.

To change a setting, click the box next to the button or action that you wish to change, and press the key that you want to map to that button or action.

Figure 3: Input Dialog



Game Controls

The SNES controller. These keys are the primary method of controlling SNES games and correspond to buttons on the SNES controller.

Frameskip

When held down, this key temporarily activates automatic frameskip, if it is not already available.

Pause

Toggles the pause function. When paused, the game does not progress until you unpause it by pressing the pause button again.

Reset Audio

Resets the audio system. Although not output, SNO emulates some sound functionality. Some games may become unresponsive due to errors with the sound system. Pressing this key will reset the sound system and may help fix freezes in some games.

Embedding SNO

SNO is a Java applet, and needs to be embedded in a web page to run (barring things like AppletViewer). This section explains how you can embed SNO into a web page and what configuration options are available.

The Basics

There are a few things you need to do to get SNO up and running on your website:

1. Download SNO
2. Upload SNO to your webserver into a publicly-accessible directory

Once `sno.jar` is on your web server, you simply embed it like any other Java applet:

```
<applet code="edu.fit.cs.sno.applet.SNOApplet.class"
        archive="sno.jar" width="512" height="496">
  <param name="sno.applet.width" value="512">
  <param name="sno.applet.height" value="496">
</applet>
```

Customize

There's several different ways to customize your embedded instance of SNO.

Dimensions

The width of the applet should be a multiple of 256, and the height a multiple of 248. The example above uses 512 by 496, which will double the size of the game being displayed.

Changing the dimensions involves changing the `width` and `height` attributes of the applet tag, as well as the `sno.applet.width` and `sno.applet.height` parameters. See the code excerpt above for an example.

Loading ROM / Save from Server

You can specify a ROM file and save file for SNO to automatically load on startup. SNO will download the file and begin executing it without any interaction from the user.

Due to security restrictions, SNO can only load a ROM file or a save file from the same server that is hosting the `sno.jar` file. If you try to point to a ROM or save file on a different server, the program will fail to load it.

To specify a file to download, use the `sno.rom.file` and `sno.save.file` parameters as shown below.

Parameters

SNO draws most configuration options from applet parameters. For example, the following embeds SNO and sets the parameter `sno.ppu.autoFrameSkip` to `true`:

```
<applet code="edu.fit.cs.sno.applet.SNOApplet.class"
        archive="sno.jar" width="512" height="496">
  <param name="sno.ppu.autoFrameSkip" value="true">
</applet>
```

The following code lists the main parameters that can be altered:

```
<applet code="edu.fit.cs.sno.applet.SNOApplet.class"
        archive="sno.jar" width="512" height="496">

  <!-- Width and height of applet -->
  <param name="sno.applet.width" value="512">
  <param name="sno.applet.height" value="496">

  <!-- Enables auto frame skip. "true" or "false" -->
  <param name="sno.ppu.autoFrameSkip" value="true">

  <!-- Number of frames to skip during frameskip -->
  <param name="sno.ppu.framesToSkip" value="5">

  <!-- Enables / disbales limit speed option -->
  <param name="sno.cpu.limitSpeed" value="true">

  <!-- Points to ROM file for SNO to download and run -->
  <param name="sno.rom.url" value="/path/to/rom/file.smc">

  <!-- Points to a save file for SNO to download and use -->
  <param name="sno.save.file" value="/path/to/save.srm">

  <!-- Sets the default controls. The values are Java
        virtual key codes. -->
  <param name="sno.input.emulator.pause" value="112">
  <param name="sno.input.emulator.resetAudio" value="121">
  <param name="sno.input.emulator.frameskip" value="192">

  <param name="sno.input.player1.up" value="38">
  <param name="sno.input.player1.down" value="40">
  <param name="sno.input.player1.left" value="37">
  <param name="sno.input.player1.right" value="39">
  <param name="sno.input.player1.a" value="68">
  <param name="sno.input.player1.b" value="70">
```

```
<param name="sno.input.player1.x" value="65">  
<param name="sno.input.player1.y" value="83">  
<param name="sno.input.player1.l" value="87">  
<param name="sno.input.player1.r" value="69">  
<param name="sno.input.player1.select" value="16">  
<param name="sno.input.player1.start" value="10">  
</applet>
```

More Information

For the most up-to-date information on SNO, visit the project webpage at osmose.github.com/sno.